

# *SACRIFICIAL INORGANIC POLYMER INTERMETAL DIELECTRIC DAMASCENE WIRE AND VIA LINER*

## **Abstract**

The present invention provides a method of forming a rigid interconnect structure, and the device therefrom, including the steps of providing a lower metal wiring layer having first metal lines positioned within a lower low- $k$  dielectric; depositing an upper low- $k$  dielectric atop the lower metal wiring layer; etching at least one portion of the upper low- $k$  dielectric to provide at least one via to the first metal lines; forming rigid dielectric sidewall spacers in at least one via of the upper low- $k$  dielectric; and forming second metal lines in at least one portion of the upper low- $k$  dielectric. The rigid dielectric sidewall spacers may comprise of SiCH, SiC, SiNH, SiN, or SiO<sub>2</sub>. Alternatively, the via region of the interconnect structure may be strengthened with a mechanically rigid dielectric comprising SiO<sub>2</sub>, SiCOH, or doped silicate glass.